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PROCEEDINGS AT THE FIRST ANNUAL BANQUET

GIVEN BY THE TRUSTEES OF THE GARDEN AT THE SOUTHERN HOTEL,
MAY 26th, 1890.

Under the provisions of the twenty-fourth paragraph of the fourth clause of Henry Shaw's will, the Trustees of the Garden issued invitations in the early part of the present year, for the first annual banquet in honor of the Founder of the Missouri Botanical Garden and the Shaw School of Botany. In response to these invitations, a company of about one hundred gentlemen assembled at the Southern Hotel, in St. Louis, on the evening of May 26th.

The gathering included the following guests: —

HON. DAVID R. FRANCIS,
Governor of Missouri.

BRIGADIER-GEN'L WESLEY MERRITT, U. S. A., Commanding the Department of Missouri.

HON. NORMAN J. COLMAN,
Ex-Secretary of Agriculture.

HON. AMOS M. THAYER,
United States District Judge.

HON. WARWICK HOUGH,
Ex-Judge of the Supreme Court of Missouri.

HON. R. E. ROMBAUER,
Judge of the St. Louis Court of Appeals.

HON. JACOB KLEIN,
HON. D. D. FISHER, and

HON. J. E. WITHROW,
Judges of the Circuit Court, City of St. Louis.

HON. J. C. NORMILE,
Judge of the Criminal Court, and

HON. R. A. CAMPBELL,
Judge of the Court of Criminal Correction, of St. Louis.

HON. G. A. FINKELNBURG.

F. H. SNOW,
Chancellor of the University of Kansas.

W. W. SMITH, LL. D.,
President of Randolph-Macon College.

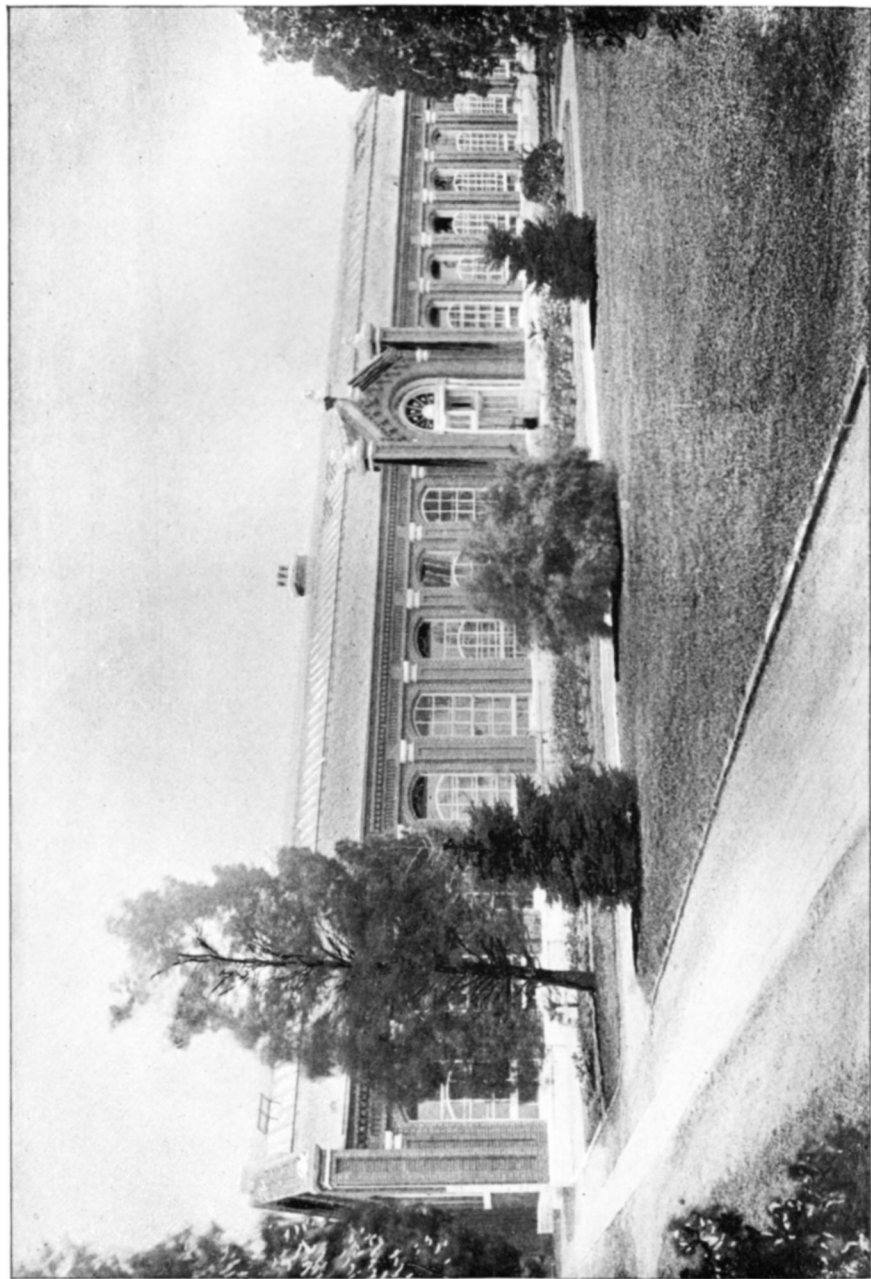
REV. J. D. HAMMOND,
President of Central College, Fayette, Mo.

PROFESSOR W. G. FARLOW,
Of Harvard University.

PROFESSOR E. M. SHEPARD,
Of Drury College, Springfield, Mo.

PROFESSOR G. D. PURINTON,
Of the University of Missouri.

PROFESSOR W. A. KELLERMAN,
Of the Agricultural College of Kansas.



THE LINNEAN HOUSE.

- PROFESSOR T. J. BURRILL,
Of the Illinois University.
- GEORGE E. LEIGHTON,
President of the Board of Directors of Washington University;
- M. S. SNOW,
Acting Chancellor, and
- PROFESSORS S. WATERHOUSE,
J. K. HOSMER,
C. M. WOODWARD,
H. S. PRITCHETT, and
H. C. IVES,
Of the same Institution.
- J. H. DILLARD,
Principal of Mary Institute.
- W. G. HAMMOND, LL. D.,
Dean of the St. Louis Law School.
- DR. H. H. MUDD,
Dean of the St. Louis Medical College.
- DR. JAMES HALL,
Director of the New York State Museum of Natural History.
- ARTHUR WINSLOW,
State Geologist of Missouri.
- LEVI CHUBBUCK,
Secretary of the State Board of Agriculture of Missouri.
- DR. G. HINRICHS,
Director of the State Weather Service of Iowa.
- C. H. JONES,
Editor of the *Republic*, and
- J. A. DILLON,
Editor of the *Post-Dispatch*, of St. Louis.
- REV. D. S. PHELAN,
Editor of the *Western Watchman*.
- JOSEPH BROWN,
Auditor of the City of St. Louis.
- J. W. KAUFFMAN,
President of the Merchants' Exchange of St. Louis.
- F. M. CRUNDEN,
Librarian of the Public Library of St. Louis.
- REV. P. P. BRADY,
Vicar General of the Roman Catholic Diocese of St. Louis.
- REV. DR. S. J. NICCOLLS.
- REV. J. C. LEARNED.
- REV. DR. H. A. STIMSON.
- REV. S. H. SONNESCHEIN.
- REV. C. M. DAVIS.
- REV. M. BRENNAN.
- REV. C. G. DAVIS.
- HON. E. O. STANARD.
- MR. RICHARD SCRUGGS.
- MR. SAMUEL CUPPLES.
- MR. F. N. JUDSON.
- MR. W. T. COLEMAN.
- MR. THOMAS DIMMOCK.
- MR. HENRY C. HAARSTICK.
- MR. ROBERT MOORE.
- DR. D. S. H. SMITH.
- JUDGE CHARLES SPECK.
- DR. JOHN GREEN.
- MR. E. H. LINLEY.
- MR. PETER L. FOY.
- MR. M. L. GRAY.

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| JUDGE J. H. LIGHTNER. | MR. CHAS. E. HALL. |
| MR. H. N. PATTERSON. | MR. J. E. KAIME. |
| MR. CARL LUMHOLTZ. | MR. WM. H. THOMSON. |
| MR. CARLOS S. GREELEY. | MR. ROBERT S. BROOKINGS. |
| JUDGE S. M. BRECKENRIDGE. | MR. J. R. LIONBERGER. |
| MR. GEORGE I. BARNETT. | MR. DANIEL CATLIN, and |
| HON. D. H. ARMSTRONG. | MR. E. C. SIMMONS. |

The Botanical Garden was represented by

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| RUFUS J. LACKLAND, President of the Board, | MR. JAMES E. YEATMAN, MR. JOSEPH W. BRANCH, C. F. MILLER, President of the Board of Public Schools of St. Louis, and |
| HENRY HITCHCOCK, Vice-President of the Board, | PROFESSOR F. E. NIPHER, President of the Academy of Science of St. Louis. |
| RT. REV. D. S. TUTTLE, Bishop of Missouri, | |
| DR. J. B. JOHNSON, | |
| A. D. CUNNINGHAM, Secretary of the Board, and | WILLIAM TRELEASE, Director of the Garden. |

The dinner having been served, the assembled guests were called to order by the Chairman, Henry Hitchcock, Esq., who said:—

Gentlemen: The Trustees of the Missouri Botanical Garden, and you as their honored guests, are assembled in pursuance of an express provision in the will of its founder, the late Henry Shaw, bequeathing a certain sum annually “for a banquet to the Trustees of the Garden and to the guests they may invite, literary and scientific men and friends and patrons of the natural sciences.”

To such an assemblage, so convened, an uncommon interest attaches. It was obviously the wish of Mr. Shaw that this social gathering should be one means of making

known, especially to the class of men thus indicated, the purpose, the promise and the progress, from year to year, of the institution upon the planning and building up of which he bestowed the thought and labor of more than forty years, by his last will devoting the bulk of his fortune to its endowment. With what success his beneficent and far-reaching plans shall be carried out, is for the future to reveal. What its promise is, what similar institutions have done and are doing elsewhere, and what benefits may be expected from it to the people not only of our own State and of the United States but to mankind, we hope presently to hear from those who are competent to speak. I have been requested to say an introductory word or two as to its purpose and organization.

In general, that purpose cannot be stated in better or briefer words than those of the tribunal which, upon the application of the Trustees for a judicial construction of the will of Mr. Shaw, determined and adjudged that by it was created "a charitable trust, for educational and scientific purposes, in the special branch of botany."

As more fully set forth in the will itself, his purpose was, to establish and endow —

"a Botanical Garden, easily accessible, which should be forever kept up and maintained for the cultivation and propagation of plants, flowers, fruit and forest trees, and other productions of the vegetable kingdom, and a museum and library connected therewith and devoted to the same and to the science of botany, horticulture and allied objects, for the promotion of science and knowledge."

Express provision is also made for instruction to garden pupils in both practical and scientific horticulture, agriculture and arboriculture, also for scientific investigation in botany proper, in vegetable physiology, the diseases of plants, the study of the forms of vegetable life, and of animal life injurious to vegetation, and for experimental investigations in horticulture, arboriculture and kindred subjects: it being also provided that the Garden shall be kept open, for the benefit of the public at large, as the Trustees

may prescribe, every day except Sundays: though the will subsequently provides that it may be open on two designated Sunday afternoons during the summer season.

In connection with the Botanical Garden, and, as his will declares, in order to augment and perpetuate its usefulness, Mr. Shaw established and endowed in October, 1885, nearly four years before his death, a School of Botany as a department of Washington University in this city: to that extent anticipating by deed the bequests in his will, which bears date in January, 1885. The objects of the School of Botany are declared to be, —

“the promotion of education and investigation in that science, and in its application to Horticulture, Arboriculture, Medicine and the Arts, and the exemplification of the Divine wisdom and goodness as manifested throughout the vegetable kingdom.”

To secure their harmonious co-operation in these purposes, it is required that whenever practicable a Professor of the School of Botany shall be the Director of the Botanical Garden; and the Trustees of the Garden are required, up to a certain amount, to make good any deficiency in the annual income of the School of Botany from its endowment.

The Botanical Garden, as laid out and maintained by Mr. Shaw himself, is part of a tract of about 150 acres in all, on Tower Grove Avenue in the southwestern part of this city: of which about 45 acres is occupied by the Botanical Garden, the Arboretum and Fruticetum, including the Museum building and the late residence of Mr. Shaw, which last, under the provisions of the will, is now the residence of the Director of the Garden; but the will contemplates and provides for the ultimate extension of the Garden over the remainder of the tract. The fund devised for the maintenance and extension of the Garden, and for the educational and scientific purposes already mentioned, consists chiefly of real estate in this city, a considerable part of which is improved, yielding an income sufficient for the immediate demands of the trust, and likely to be

largely increased in future by the leasing or improvement of the remainder.

All this property was devised by Mr. Shaw, upon the express trusts already mentioned, to certain persons named or designated in his will, who should together constitute a Board of Trustees, and who are required to keep written minutes of their proceedings. This Board has no corporate character. It is simply a body of individuals, all alike and equally charged, as co-trustees, with the execution of the trusts declared in the will, and who are subject, like all other trustees, to the supervision and control of a court of equity in the performance of their duties. The will does not confer upon any Trustee any power or precedence as such; but it declares that the acts of a majority of the members of said Board, at any meeting regularly called and held upon due notice, shall be deemed and taken, for all the purposes of said trust, to be the acts of said Board and of said Trustees. It designated nineteen devisees, fourteen of them by name, the remaining five by style of office, namely — following the order of the will — the Chancellor of Washington University, the Bishop of the Episcopal Diocese of Missouri, the President of the Public Schools, the President of the St. Louis Academy of Science, and the Mayor of the City of St. Louis, and their respective successors in office. Four of the devisees named in the will having died before Mr. Shaw, — the late Gerard B. Allen and Adolphus Meier of this city, Dr. Asa Gray, the distinguished botanist, of Cambridge, and Professor Baird, late Secretary of the Smithsonian Institution, — it has been judicially determined that the number of Trustees was thereby reduced to fifteen in all. The actual number of Trustees at present is fourteen, the office of Chancellor of Washington University being temporarily vacant.

In order to assure the validity and permanency of this trust, Mr. Shaw obtained, thirty years ago, the passage by the Legislature of Missouri of a special Act, approved March 14, 1859, expressly referred to in his will. This Act

authorized him, either by deed in his life-time, or by his last will, or both, to devise any part of his property to Trustees for these specific purposes, and to provide for the succession, removal and substitution of such Trustees: and accordingly the will provides that all vacancies in the Trust shall be filled by the remaining Trustees.

Mr. Shaw departed this life in August last, having reached his ninetieth year and having retained his vigor of mind and body to a remarkable degree. His will was admitted to probate in September, soon after which the Board of Trustees was duly organized as therein provided, and without delay received possession of the Garden and other real estate devised to them. As provided by the will, they at once appointed Professor William Trelease Director of the Garden, that gentleman having been appointed Professor in the School of Botany in June, 1885, upon the nomination of Mr. Shaw and the recommendation of Dr. Asa Gray. To him is directly committed the development and fulfillment, from year to year, of the ultimate purposes of the trust: its business administration and superintending control, within the limits assigned by the will, remaining with the Trustees. We hope for the pleasure of hearing something from Professor Trelease concerning the educational and scientific work already planned and entered upon, with an intelligence, energy and efficiency on his part to which the Trustees gladly avail of this occasion to bear witness.

This rather dry and business-like explanation fulfils, I believe, the preliminary duty assigned to me. It is for others to speak of that interesting theme, the broad and beneficent purpose which gives vitality and interest to this occasion. An attempt on my part to do so would, I fear, only expose my own ignorance: for although the process of my earlier education included some compulsory digging of Greek roots and some attention to what were called flowers of speech, I am sorry to say that it did not include the study of botany, nor any adequate instruction in the won-



SUMMER HOUSE IN THE FRUTICETUM.

ders and beauties and riches of the kingdoms of Nature. In that regard, too many professional and business men must still be classed with the hero of Wordsworth's poem, of whom the poet says:—

“ In vain, through every changeful year,
Did Nature lead him as before.
A primrose by a river's brim
A yellow primrose was to him,
And it was nothing more.”

And yet, to understand and appreciate the beneficent purpose and value of a trust like this, surely there is no need of technical knowledge. No one need be urged to enjoy the beauty of the flowers, the soft refreshment of the green grass and the soothing murmur of the rustling leaves. To the dullest eye new lustre comes, to the most unsympathetic soul a new joy, with that annual miracle newly wrought with each returning spring, the resurrection of Nature from her wintry grave. If there is any knowledge common to us all, it is that of the relations of the vegetable kingdom to our daily life, in the matter of food and raiment and refreshment of body and mind. To the most prosaic mind a moment's thought recalls the infinitely various economic uses of plant and flower and fruit and tree. The romantic interest attaching to the daring exploits and marvellous achievements of Stanley in the heart of Africa is not lessened by the revelations he brings back of new fields for commercial enterprise afforded by its tropical forests. But it is obvious to the most careless mind that the true key to all the boundless wealth and the exquisite beauty which the goodness of God has so lavishly bestowed upon us in the vegetable world must be furnished by Botanical Science. For by Botanical Science, as I suppose, is meant that accurate and extensive knowledge of the various productions of the vegetable kingdom, which shall enable us, not only to classify and arrange them in families, orders, genera and species, but to determine their properties and value for the

use of mankind, as well as their habitat and history, to ascertain the laws of their growth and being, and by the patient and skilful application of those laws even to increase and diversify that beauty and still further to develop that wealth.

To such a purpose, when his life had scarcely reached its noon, did Henry Shaw resolve to devote the remainder of his days, consecrating to it the acquisitions of an assiduous and successful industry. For that purpose, by his last will, this Trust was founded, and is to be administered by those to whom it will be a labor of love.

You will gladly join with me, gentlemen, in doing honor to the Founder of the School of Botany and of the Missouri Botanical Garden: and to that sentiment I ask the President of the Board of Directors of Washington University, Colonel Leighton, to respond.

COLONEL LEIGHTON.

Mr. Chairman: As the representative of Washington University, an institution selected by Mr. Shaw to carry out a considerable and most important part of the work embraced in his wise and beneficent scheme,— a part which supplements and makes complete that which he has placed in your hands as Trustees of the Missouri Botanical Garden, — I cannot but take pleasure in responding to the sentiment you have given and briefly expressing the appreciation of my associates in the governing Board of Washington University for Mr. Shaw, who you will remember was an associate for some years; and of the opportunity afforded them by him to establish, under the most favorable conditions, in connection with the garden, one of the best equipped schools of botany in the world.

But I find myself, at the very outset, embarrassed in attempting to distinguish any especial feeling of gratitude on the part of the University from the common feeling of grat-

itude which we all experience as citizens of St. Louis, in the thought of the broad, bountiful, beneficent and far-reaching scheme as a whole. We unhesitatingly place the name of Henry Shaw upon the lustrous roll of honored citizens, living and dead, who, having been merchants, manufacturers, lawyers, clergymen, or physicians, have been more than merchants, manufacturers, lawyers, clergymen or physicians in their relation to the progress and well being of our City.

This is the first annual meeting under a peculiar and most commendable provision of your Trust, — the first of a series which, with ever-changing constituents, may, and probably will, extend through centuries.

Now, when most of those of us who are privileged to be present remember Mr. Shaw as a personal friend, — when so many are here who have often shared the hospitality of his house and home, — a characteristic which will diminish with the years, — now let us make a record of our sense of his high character as a citizen, his public spirit, his broad sympathy and generous help in all that was ennobling and uplifting, his intense love for our City, his simple, unostentatious and useful life. Honor his name as we may in the present, as we move away from the years of contemporary knowledge of the man, the appreciation of his splendid beneficence will increase, and our successors will come to measure the man, — not as we do by his personal qualities, but by the magnificent result of his life.

Private munificence in varied forms is one of the distinctive and most honorable characteristics of our American civilization. In a government like ours, the things which most uplift and ennoble a community must of necessity spring from the people, as individuals. Government may protect individual rights in person and property, may promote public works of a necessary character, may clear the way for personal enterprise and thrift, and give them a fair field; but it cannot, in any due degree, as a government, where the use of money is required, do much to stimulate or de-

velop the higher life of a community. Education, art, science, in their higher departments, — all that which we call culture, as well as all, even the most common charity, must look — not to the government, but to the individual, to assert and enforce their claims. And the individual who is to do this, is not of a distinct race or profession or pursuit. He is, and must be, one of ourselves. He must be the man whom we meet in our daily walk, as the merchant, the manufacturer, the lawyer, financier, clergyman, or man of affairs, who has been made to see, and does see, that there is a more complete and more enjoyable life than that which is wholly confined within the narrow boundary of the warehouse, the office, or the shop.

If we should strike out from our States and cities the institutions, religious and secular, founded and sustained solely by private munificence, the barrenness of our civilization in its higher range of influence would be most startling. Our churches, colleges, academies, museums, asylums, hospitals, libraries, our institutions for the study and development of science, art, music, — all these owe their origin and their support to a recognition on the part of individual citizens of a vital need which Government cannot meet.

Mr. Shaw had the capacity and the good fortune to see that there was a fuller life for him than his career as a merchant afforded, and before middle age he found, in that wonderful and complex mystery which we call nature, as manifested in fruit, and flower and tree, the possibilities of that larger life to him which brightened and blessed more than half a century of his own existence, and will continue to brighten and bless this community for centuries to come.

It was a large thought, that which years ago came to him, to perpetuate the magnificent work which his love and interest had created and developed; and having shared it most generously with his contemporaries, to make it live for generations to come.

Many men have had just such dreams of beneficence. It is the weakness of our poor human nature that we permit

our dreams of usefulness to fade, and we die with grand purposes unfulfilled. I am a poor interpreter of our common nature if I am wrong in saying that some time, in better hours, have come to each of us, those noble purposes of beneficence, or larger usefulness and wider influence, quite within our reach, which, if they had been permitted to take shape in created work, would have brought to this city of St. Louis a golden age, in all that ennobles and uplifts a community.

Mr. Shaw, however, made real his dream of usefulness, in an executed scheme, — a scheme thoughtfully and wisely worked out in all its details long years ago, and in no degree dependent upon his own years of life. Death makes no break in the continuity of a life so merged in a definite and an accomplished purpose.

Mr. Shaw's purpose, whilst largely to give pleasure to the whole community by the maintenance of the garden, was something more than that. His own enjoyment was not simply from the æsthetic side. He had learned to know that, beneath the transient sensuous beauty of leaf and branch and flower, was a more occult, yet a more permanent and a diviner beauty of law, as yet but imperfectly revealed; and the establishment of the School of Botany, where patient study of that law might be pursued by the few, was a necessary supplement to the full enjoyment of the garden by the many. There is no word left for the critics to speak as to what more might have been done. The whole is complete and rounded and perfect as Achilles' shield.

And not the least consideration, it seems to me, in honoring Mr. Shaw, and one which addresses itself peculiarly to us, is the thought that his beneficence, whilst wide and far-reaching, and comprehensive in its influence and in its results, is essentially a local beneficence, — one springing in a great degree out of his affection for the city of his more than three-score years of residence.

I cannot but think that the tendency of the age is to les-

sen our local affections and interests. Whether it be due to the intensity of our modern life in what are called practical directions, leaving little leisure for the nurture of the finer sentiments of life, whether it be the increased facility of inter-communication which tends to broaden, rather than localize, our personal life, or the cosmopolitanism of the press which makes us all, in spite of ourselves, citizens of the world, and compels our attention to the world's larger stage of action, — whatever it be, I think the result is to be observed; and it is a pleasure to be reminded by this generous creation of Mr. Shaw, of what it is to give back to St. Louis in some form, some portion of what she has so bountifully given to us.

It is of minor importance in what shape or direction such a feeling manifests itself, nor is it dependent on great gifts, but it is of importance that all our professions of love and interest in our city should take form, — not in words, but by working together in ways that, year by year, advance her in some degree, however small, in those countless ways that make up what we call civilization.

An occasion like this presents the opportunity for only the briefest expression of the thoughts which arise, and I must not detain you. Again and again, through the years to come, words of commendation will be spoken at these annual meetings, justly honoring Mr. Shaw and honoring his work. May we who knew him for many years, put upon record our appreciation of the great influence of his long, serene and simple life, and of the grand purpose in which it culminated. It was like one of those perfect summer days in which he loved to walk in reverent friendship with the flowers.

His twelve long hours,
Bright to the edge of darkness; then the calm
Repose of twilight,—and a crown of stars.

The Chairman then called upon Professor William Trelease, the Director of the Missouri Botanical Garden, as follows:—

It has already been stated, gentlemen, that the chief purposes of this Trust are educational and scientific. The will which created it provides that the Director of the Garden shall “employ his energies that from year to year the institution under his charge shall grow up in efficiency in promoting the ends in view in its inception.”

Professor Trelease, the Director of the Garden, whom we have the pleasure of having with us this evening, was a pupil of Dr. Asa Gray, a name honored by all votaries of Science, not only of Botanical Science, but of Natural Science in its widest sense. Four years ago, upon the recommendation of Dr. Gray, as well as his own conviction of its appropriateness, Mr. Shaw nominated Dr. Trelease as Professor of the School of Botany, with the purpose that when the proper time should come he should be appointed the Director of the Garden,—a duty which the Trustees promptly and gladly fulfilled. In his hands chiefly rests, as I have already said, the development of the institution.

You will join me, gentlemen, in wishing all success and usefulness to the Missouri Botanical Garden. I have the great pleasure of asking Professor Trelease to tell us something of its promise, of the plans which have been adopted and of the work which he has so well begun.

MR. TRELEASE.

There is one branch of Botany, Mr. Chairman, that I have never cultivated very much,—the one my friend Mr. Hitchcock referred to, and that has been so fully exemplified in what has been said already,—that branch relating to the flowers of speech. However, there are a few plain botan-

ical facts that I presume are worth more at this particular stage in the development of the Garden than a more polished statement of the case which left some of those unsaid. For that reason, possibly, what I may be able to say may have some interest and some value.

Nobody on being called on to assume the direction of an institution which promises so much as this Garden, could fail to be impressed by the fact that a very considerable part of what the Garden may realize must depend upon the adoption, in the very beginning, of a broad and comprehensive, and yet very elastic, plan for its development. I am far from feeling able to form such a plan, which must depend upon a good and full knowledge of what may properly be held to be the functions of such an institution; but I have thought that possibly it might not be without interest if I were to run over two or three of the things that occur to me as important functions of a Garden.

If this were the time and place for it, I have no doubt that a discussion of the history of botany and botanical gardens might be made to throw a good deal of light on this question, for history has its lessons in science, as in politics. But I must content myself with saying that the early ideas of botany, and the early botanical gardens, were strictly utilitarian. A botanical friend, a few weeks ago, on his way to Mexico, told me that the simple country people with whom he is thrown in contact in his botanical tours in the wilder parts of the country, people who have no money to buy drugs with, are extremely interested in the plants which can be used for healing their ailments. They are obliged to look these things up for themselves, and he said that whenever he collected a plant and was seen doing so he was at once asked "Qué remedio?"—"What does the thing heal? What is it good for in that way?" A great deal of the early botany and a great many of the early botanical gardens depended upon a considerable interest in this same question,—the healing virtues, the medical properties, of plants. This is, of course, a strictly utilitarian idea of botany.

There is a pleasure that we all derive from seeing flowers. There is a certain restfulness in the green of the grass. There is a satisfaction in seeing things grow. In planning anything in the way of a garden, even limiting it by prefixing the word "botanical," it is impossible to divest the idea of a garden from the idea of a park, — a place to which people can go for their recreation, a place where a love and taste for the beautiful may be at once cultivated and gratified; and it is to me a real pleasure that, by the express provisions of his will, Mr. Shaw has determined that the ornamental features of the Garden which has for many years proved a source of pleasure to the citizens of St. Louis and to visitors from a distance, shall be maintained; that there shall be no less attractiveness than in the past, but rather more. I think it is a very easy thing to promise that this provision shall be complied with. It is a pleasure to feel this. And yet it costs a great deal of money to maintain a park, and I have no doubt that some of my botanical friends will criticise the annual expenditure of a very large sum of money for maintaining the strictly ornamental features of the Garden. I am rather glad that if so, they cannot criticise me personally for this. Whether I feel that in all cases this money is well spent or not, the general feeling cannot be resisted that it will do good. Not only can a garden which is an ornament conduce to the pleasure of people, but in a very unobtrusive way, by simply giving access to a named collection of plants, it is doing much more than that. People see a plant with a name, and ask a question and answer it at the same time. They get information. They become started; and it is a very simple matter, having once begun that kind of questioning, to continue it. And so the simple, unobtrusive naming of a collection of plants is, I think, doing a great deal of good educational work.

But this idea of contributing to pleasure, and the attendant idea of giving such information as comes incidentally, is that which is farthest from what I have already spoken of as the original intention of a garden, — the strictly utilitarian idea

of a garden. The question has been asked me many times, "What technical uses can the Garden be put to?" I shall not attempt to take the time that would be needed to answer this question in full, and yet there are a few such uses that it may be proper to run over. One of them is education, which has already been touched upon; and Mr. Shaw has shown the importance that he attached to this by the separate endowment of a School of Botany. To furnish material, — to furnish other facilities, — for the study of botany and for instruction in botany, is one of the very important functions of such a garden. But botany is a rather comprehensive subject. It may be made to include practically all knowledge of plants and of their growth and the laws of their growth. Mr. Shaw indicates, by a word here and there in his will, and by other information that shows it even more clearly, that he believed that one of the important functions of the educational side of the Garden, in the future, should be the training of gardeners. Not merely men who can grow one kind of rose and make that a commercial success, — that is a good thing to teach, — but men who can grow not only one kind of rose, but any roses that may be brought to their care. Not only roses, but other plants needed for ornament. Not merely ornamental plants, but fruits. Not merely fruits, but medical plants. In a word, that instruction might be given in all that concerns the growth of plants for all useful purposes. One of the steps that the Board of Trustees of the Garden, — who, I may say, have very cordially supported me in every wish that I have shown so far toward the development of the Garden, — one of the steps that they saw fit to take very early in their organization, was to provide for this kind of instruction. The matter is an experiment with us as yet. It may come out well, and yet we shall undoubtedly learn a great deal in the first few years; but it is under way, and has been started by the endowment of a series of scholarships, — yielding no large sum of money, but enough to pay the expenses of students and to give them this kind of instruction. Not merely to

teach them botany, but to teach them in addition to that how to grow plants. Not merely to teach them how to grow plants, but what those plants are, and the other things that are closely connected with botany and practical gardening. In a word, to make broad-minded gardeners. And I think that as time goes on and as we have opportunity to test, by their results, the steps that are being taken, and to modify them in accordance with the needs that become evident, we shall find that a very considerable part of the good the Garden can do will be done in just this way.

And yet this is only a small part of the work. A very considerable part of the office of any institution, with facilities for any kind of work in addition to the instruction it gives, is the manufacturing, if I may use the term, of new material: the working out of new tools; the elaborating of undigested material; and that brings up, of course, the whole question of scientific botany. I can foresee that, as time goes on, the Garden, if no serious mistakes are made in its management, will be able to contribute in no small degree to a knowledge of our North American flora, — of the plants of North America. Any local botanist well knows the plants within a radius of ten or twenty miles about his home. This is a simple matter. But Doctor Gray lived to see the completion of only about one-third of the entire synoptical elaboration of our North American flora. We may know the plants within a radius of twenty or thirty miles about St. Louis; but the North American flora as a whole has still to be worked out in such shape that any student of fair intelligence can determine what a plant from certain parts of the country is. I do not for a moment think that we shall play as important a part in this work as other institutions may do; as Harvard University, where Dr. Gray's typical herbarium is located, for instance; but I do feel that we can contribute to this work in no inconsiderable degree.

A great many of the characters of plants are transient. They disappear after a few weeks, after a few days,

after a few hours in some cases ; and yet these characters can be preserved indefinitely if the plant is dried or otherwise preserved properly at the right time. A great many of the characters of plants can be determined only while their fruit lasts, while the flower lasts ; and so, for these and other reasons, comes the necessity of forming an herbarium and a museum,—a collection of material, in other words, in condition for the study of these characters a decade or a century after the plants were collected. A great many of the characters of plants, however, cannot be preserved in this way ; and yet a drawing faithfully made at the time when the character is well shown,—for instance, in a transient flower,—may last forever. Hence the occasion for a library, in which these characters are faithfully recorded in word and sketch. Such a library and herbarium are being formed in a quiet way for the Garden, and will be enlarged in such measure as seems wise. We may in a given day use only two, or three, or twenty specimens or pages of a book ; but in the course of years all come into use ; and I regard as the foundation for any institution which is to have scientific value, such collections as these, which are to be drawn on when they are needed, as a basis for work.

A foundation of this sort cannot be made in a day. It is not a thing which by a herculean effort can be gathered at the moment when it is needed for use. It is a foundation that must be laid stone by stone. It is very expensive,—in time, money and energy,—and at the same time it is a thing that must gradually be brought together. I hope that here at the Garden this may be done until we shall have laid such a working foundation as may lead to the best work that can be looked for.

Such a collection, with the other things that group about it, gives the means of studying not only the systematic botany of a region,—of studying what plants are,—but also of studying the ways in which plants grow ; contributing thus directly to horticulture through the advance-

ment of a knowledge of vegetable physiology,—a subject which is by no means exhausted;—and by the study of the diseases of plants and of the possible preventives or remedies for such diseases,—a subject which is as yet almost unexplored. I look forward to a great deal of work that may be done in this way, and I hope that as time goes on the Missouri Botanical Garden may play its part in such work.

And yet, the facilities that I have spoken of are only the foundation for work. The character and strength of an institution depend primarily upon laying a good foundation, but afterwards upon having builders who can complete a superstructure worthy of the foundation; and I hope to live to see the Garden the nucleus for a collection of botanists who may be known at home and abroad as leaders in the subjects of their specialties. If we realize what I look forward to, I think that we shall carry out to its fullest extent the extremely wise and broad plan of the Founder of the Garden.

The Chairman then called upon his Excellency, David R. Francis, Governor of the State of Missouri, in the following terms:—

Gentlemen: Natural science belongs to no locality, to no country,—I may add, to no historic time, for the ancient records in which is found “the testimony of the rocks,” take us back to periods whose duration the geologist and palæontologist confess their inability to determine. Its domain includes not merely every quarter of this terrestrial globe, but the most distant and unfathomed realms of space. Its votaries seek to discover those all-pervading, all-sustaining laws of Nature and of Nature’s God, which assign to every molecule and atom its place and function in the universe, and in obedience to which myriads of blazing suns, with their attendant planets and satellites, pursue their stately march. The spectroscope, which tells the

manufacturer of Bessemer steel at what moment carbon enough has been burnt out of the seething white-hot mass of metal in the converter, also reveals to the physicist the constituent elements of the glorious orb which floods this earth with its life-giving light. To the discovery of those laws and their application to the wants of our daily life, we are constantly more and more indebted for the comforts, even for the necessities, of civilization. Our tables bear contributions from every clime and zone, the knowledge of whose properties and value, even the methods of their production, are the gift of natural science: and in respect of some of the most valuable of them, under the fierce competition of modern industry and trade, that knowledge has become one of the conditions of success in conducting the commerce of the civilized world.

And yet this trust, created for the promotion of a branch of science which has to do with the vegetable products of all countries, has its own local habitation. By choice and by adoption, Henry Shaw was a citizen of St. Louis, a citizen of Missouri. In founding this trust, he gave to it the name of this great State, a State whose boundless resources, mineral and vegetable, are only beginning to be known.

We are this evening honored, gentlemen, and the Trustees of the Missouri Botanical Garden are extremely gratified, by the presence of the Chief Executive officer of this State: and in announcing the sentiment, "The State of Missouri," I can ask no fitter or more competent man to respond than Governor Francis.

GOVERNOR FRANCIS.

Mr. Chairman and Gentlemen: I am almost afraid, in this company, to give or attempt to give the author of any sentiment or expression. I believe it was Doctor Holmes, however, who said that the society of men of genius was

intoxicating. I do not know how to repay your Chairman for calling upon me upon this occasion after an express agreement not to do so, unless it be by relating an experience which General Sherman told me he had had at the celebrated Clover Club in Philadelphia. The General had been invited, he said, time and again to attend the meetings of that Club, but knowing the practices of its members he had declined, with thanks, the invitations. Finally, the President prevailed upon him to accept the invitation upon the express condition that he would not be called upon to speak. The General was seated near the President, and after one or two of the distinguished guests had been called upon to respond to sentiments and had attempted, only, to do so, — because the Club does not permit a man to speak very often, — the Chairman arose and said, “We have with us this evening a distinguished guest in the person of the General of the Army. I have agreed not to call upon him upon this occasion, but,” said he, “you all know what a liar I am.” I do not mean that that applies to the Chairman of this meeting.

Especially is this company embarrassing, and it is with trepidation that I rise to respond to this sentiment, when I see seated around this board not only men distinguished in the world of Science, but many of my old Professors who but a few years ago aided me in delving for those Greek roots to which our eloquent Chairman alluded a few moments ago; but, gentlemen, the sentiment “The State of Missouri,” is one which ought to strike a responsive chord in the breast of every citizen of the commonwealth. What idea is conveyed to our minds by the mention of that name by which we designate this commonwealth? We are reminded, of course, that this is an integral part of the federal Union and that whilst as a State it is a constituent part of an indissoluble Union, at the same time it has sovereign rights which are expressly agreed to in the compact which made the Union. I am reminded of this phase of the question by a discussion which I had with your

honorable Chairman this evening as to the bearing of the "Original Package" decision. Whilst submitting gracefully and peacefully to the will of the majority, we cannot forget that all power not given to the Federal Government was reserved to the States in that compact, and that any other power which arrogates to itself the right to enact police and sanitary regulations violates the spirit and the letter of that compact. But there is another idea conveyed to our mind. When we speak of Missouri, we immediately think of this broad expanse of territory, greater in area than any State east of the Mississippi, fertile and diversified in resources, and a State which yields annually its quota towards the wealth of this Nation. A State which, during the year now ending, will contribute over ten millions of dollars to the mineral wealth of the country, to say nothing of its agricultural product. A State whose timber interests are second to none; and, in that direction, that great public benefactor whose memory we meet here to honor this evening has conferred upon this State a lasting benefit. He has given us the means and pointed out to us the way in which we can utilize these great gifts of Nature. But higher and greater than all these, when we speak of Missouri, is another feature, and that is the citizens that create and compose the commonwealth. Those who make it what it is, those who develop its resources, guard its honor, enhance its enlightenment, augment its glory, promote its progress, make its history; and, among those citizens, we are proud to claim Henry Shaw. The gentlemen who have spoken here this evening, whilst paying just tribute to the memory of that man, seem to have rested upon the fact that he was a citizen of St. Louis. He was also a Missourian, my friends, and he acknowledged his fealty to the Commonwealth by naming this unequalled Garden for the State of his adoption. It is the Missouri Botanical Garden, and it belongs as much to the citizens of this State as it does to the citizens of St. Louis alone. St. Louis is a part of Missouri; Missouri is

proud to claim St. Louis, Missouri takes an interest in St. Louis and takes pride in her progress. And if St. Louis but felt the same interest and extended the same courtesy to the State upon every occasion that the State does to St. Louis there would be that warmth of feeling, that fraternal regard which should exist between the country and the city and the absence of which we have for so long deplored. We are all Missourians; we feel proud of the State, and the very mention of the name of the Commonwealth should arouse within us a feeling of pride. We should take an interest in the welfare and the progress of this Commonwealth, and every man should feel it to be his duty to put his shoulder to the wheel and do what he can to increase the wealth and the glory of Missouri.

On behalf of the Commonwealth I am glad of this opportunity, Mr. Chairman, to pay tribute to the memory of the distinguished citizen in whose honor we are assembled this evening. He was a Missourian whose fame was not confined to the City of St. Louis nor, indeed, to the State of Missouri, nor to the United States. The presence of these distinguished guests this evening attests the estimate in which he was held by the scientific world; and on the part of the people of Missouri I desire to extend to those gentlemen a cordial greeting. And on the part of Missouri, also, sir, to say that we honor and shall continue to revere the memory of Henry Shaw.

The Chairman: The Governor has truly said, gentlemen, that the name and fame of Henry Shaw and of the institutions which he founded are not confined to the City of St. Louis or the State of Missouri. Will you allow me for a few moments to call your attention to some of the expressions of regret from those whom we had the honor to invite, but who were prevented from attending? I am sure that these tributes will be acceptable.

I read first a letter from Senator Vest, dated Washington, April 30, 1890.

UNITED STATES SENATE, }
WASHINGTON, D. C., April 30th, 1890. }

My Dear Sir: The very kind invitation transmitted by you from the Trustees of the Missouri Botanical Garden, inviting me to attend the Annual Banquet to be given on May 26th, 1890, in honor of Henry Shaw the Founder of the Missouri Botanical Garden and the Shaw School of Botany, has been received, for which convey to the Trustees my sincere thanks.

Nothing would afford me greater pleasure than to participate upon any occasion intended to honor the memory of Henry Shaw. He was a public benefactor, and his unselfish devotion to the people and city of St. Louis entitles him to their abiding gratitude. His simple and unostentatious life, and unpretending charity, can never be forgotten by those who know the full measure of his beneficent action towards those who had no other claim upon him than the common "touch of nature" which unites all mankind.

I became acquainted with Mr. Shaw more than thirty years ago, and his character and attributes always commanded my sincere respect.

There was much in common between him and Mr. W. W. Corcoran of this city. They were both types of that public spirit and genuine philanthropy which adorn and elevate humanity.

I regret very much that my public duties here will prevent my attending the Banquet, but I desire in the most public manner to add my tribute to the worth of Henry Shaw.

Very truly, &c.

G. G. VEST.

A. D. CUNNINGHAM, ESQR.,
319 North Seventh St.,
St. Louis, Mo.

The Chairman then read the following letters, likewise received by the Secretary of the Board : —

DEPARTMENT OF THE INTERIOR, }
BUREAU OF EDUCATION, }
WASHINGTON, D. C., April 29, 1890. }

Dear Sir: I acknowledge herewith the receipt of the card of invitation to the Annual Banquet given by the Trustees of the Missouri Botanical Garden at the Southern Hotel in honor of Henry Shaw, the Founder of the Garden, and the Shaw School of Botany.

As it will be impossible for me to be present in St. Louis on the 26th of May next, I desire to thank you for the honor of the invitation and to express herein the high personal esteem which I held for Mr. Shaw dur-

ing his life and my feeling of honor and respect for him since his death. The people of St. Louis will hold in perpetual remembrance his kind and wise thoughtfulness for their good. The provision which he has made not only for their health and amusement, but also for their instruction through the Botanical Garden, will always commend the name of Henry Shaw to their gratitude. But there is no action of his out of the long list of good deeds which stand to his credit, that has appealed so strongly to my sense of obligation as his provision for a perpetual professorship of botany in connection with the chief educational institution of St. Louis. By this provision a connecting link is, as it were, made between the University and the Botanical Garden in such a way as to make the entire gift of the garden and professorship in its practical effects an endowment to the University.

In the centre of a vast agricultural region, here is an institution for laboratory work of the highest scientific and economical value in the study of plant life.

It is safe to predict that the future will see a large representation of specialists resorting to St. Louis to pursue the studies necessary for the promotion of agricultural industry.

I am very sincerely yours,

W. T. HARRIS,
Commissioner.

SMITHSONIAN INSTITUTION, }
UNITED STATES NATIONAL MUSEUM, }
WASHINGTON, April 26, 1890.

Dear Sir: The invitation of the Trustees of the Missouri Botanical Garden to join them in honoring the memory of its Founder is one which no scientific man would willingly decline.

For those who, like myself, cannot be present in *propria persona*, on account of their particular situation in space and time, will unanimously request to be regarded as present in the spirit and with the spirit which must animate all lovers of science on such an occasion. It would be superfluous, nay almost impertinent, for me to offer a personal opinion as to the services, past, present and to come, of Mr. Shaw, where so many who have had the privilege of knowing him are able to speak, but it may not be ungracious in me, as one who did not personally know him, to add my humble testimony to the regard and appreciation which his noble benefactions excite in minds which appreciate the wise generosity which saw its fullest opportunity in promoting the increase and diffusion of knowledge among men.

I am very sincerely yours,

WM. H. DALL.

St. Louis, May 9th, 1890.

My Dear Sir: Your kind invitation in behalf of the Trustees of the Botanical Garden to the Annual Banquet is received. I thank them for

the compliment and desire to send my regrets that I will not be able to attend.

I cannot content myself with the mere expression of regret. I honor the memory of the late Founder of the "Missouri Botanical Garden" and "The Shaw School of Botany."

I consider him as one of the greatest benefactors of our State and the Garden as one of the proudest monuments that can be reared to the memory of a cultured citizen.

The city of St. Louis is greatly indebted to his large-minded beneficence, and there is no greater attraction to visitors than his wise foresight has provided.

He has gathered together in this inviting resort a beautiful illustration of the truth of the motto he has chosen for his mausoleum "How manifold are Thy works; in wisdom hast Thou made them all, the Earth is full of Thy riches."

Please convey this expression of my thanks to the Trustees.

Respectfully yours,

M. SCHUYLER.

STATE UNIVERSITY OF MISSOURI, }
CHEMICAL LABORATORY, }
COLUMBIA, Mo., May 17th, 1890.

Dear Sir: It is with genuine pain that I inform you of my inability to be present at the Annual Banquet, in honor of Mr. Shaw, of the 26th of this month. The closing exercises of this University, beginning with the final class examinations on that day, would seem to render my absence at that time impracticable. I regret this all the more as my respect for Mr. Shaw while living has been increased since his death by that splendid monument, which his far-sighted sagacity has left alike to his memory and to science,—the Missouri Botanical Garden. His State will forever honor him, and as a citizen and a representative of this University, I beg to assure you of my lively interest in all the achievements of the Botanical Garden, practical as well as scientific, so full of promise and so well assured under its present management.

Very respectfully yours,

P. SCHWEITZER.

DALHOUSIE UNIVERSITY, }
HALIFAX, NOVA SCOTIA, 2nd May, 1890.

Dear Sir: May I request that you will be pleased to convey to the Trustees of the Missouri Botanical Garden my best thanks for their kindness in honoring me with an invitation to the Henry Shaw banquet. I regret very much that duties here-of an unusual kind will deprive me of the pleasure of being present on an occasion of so much interest, otherwise I would have cheerfully embraced the opportunity to join in doing honor to one who has done such signal service for botan-

ical science, and for humanity. Dr. Robert Brown, whose acquaintance during his later years I enjoyed in my youth, was characterized by Baron Humboldt as *facile princeps botanicorum*, not so much for the volume of work accomplished, as on account of the sagacity he displayed; and, in like manner, Henry Shaw may well be styled the prince of botanical patrons, not merely for the munificence of his gift, but because also of the wisdom shown in its disposal.

Permit me to express, what every true botanist must feel, my heartfelt desire for the prosperity of your institution.

I remain, dear sir, yours faithfully,

GEORGE LAWSON.

APALACHICOLA, May 9, 1890.

Sir: I am in receipt of your invitation to attend the annual banquet given by the Trustees of the Missouri Botanical Garden in honor of Henry Shaw, its Founder.

To honor such a benefactor of his race is not a pleasure merely, but a duty; and I have an added inducement in the recollection of pleasant personal relations many years ago. I wish it were possible to be with you, but the infirmities incident to a life of more than fourscore years are too great to allow me to undertake so long a journey, or to enjoy the pleasures of the occasion, if present.

Very respectfully,

A. W. CHAPMAN.

ALBION, ORLEANS COUNTY, NEW YORK, 24th May, 1890.

My Dear Sir: Ill-health keeps me still wholly retired here in Western New York. Were I able to travel, I should esteem it a pleasant privilege to accept the invitation to their Annual Banquet, with which the Trustees of the Missouri Botanical Garden have honored me.

In consequence of my absence from Washington, this favor has only now reached me. I trust, however, that my reply will prove seasonable enough to duly convey my appreciation and plead my sincere regrets, as

Yours truly & obliged

FRANK HAMILTON CUSHING.

LABORATORY OF CRYPTOGAMIC BOTANY, }
CORNELL UNIVERSITY, April 30, 1890. }

My Dear Sir: I regret very much, that my duties here will prevent acceptance of the invitation extended by your Board, to the banquet appointed for May 26th, 1890.

The first great patron of botanical science in America indeed deserves all the honor that can be shown his memory.

Very truly,

WILLIAM RUSSELL DUDLEY.

BOSTON SOCIETY OF NATURAL HISTORY, }
 BERKLEY STREET, BOSTON, MASS., May 3, 1890. }

Dear Sirs: The undersigned regrets exceedingly not being able to be present at the annual banquet given in honor of Henry Shaw, Founder of your Botanical Garden and the School of Botany.

Such opportunities are of rare occurrence, and I always desire to take part in them whenever it is practicable, because I think it the duty of every scientific man to show that he feels grateful to the men who are willing to give for the benefit of science, and to found institutions which cannot but become centres for the encouragement of research and the dissemination of knowledge.

With great respect for your institution and its founder, I remain,

Cordially yours,

ALPHEUS HYATT.

VANDERBILT UNIVERSITY, }
 NASHVILLE, TENN., April 25th, 1890. }

Gentlemen: I have the honor to acknowledge the receipt of an invitation to attend the Annual Banquet to be given in the City of St. Louis, May 26th, in honor of Henry Shaw, the Founder of the Missouri Botanical Garden and the Shaw School of Botany.

I highly appreciate the honor and the interest of the occasion, but regret to say that, owing to my engagements at the time, it will be out of my power to attend. It would be a pleasure to attend, and it is meet that all who can should join St. Louis in doing honor to the memory of Mr. Shaw. The benefits of his work and liberal gifts are not confined to your city or State. We in Tennessee and Nashville, in common with the whole country, feel their influence for good, and shall be ever grateful that Botany has had so generous and able a patron.

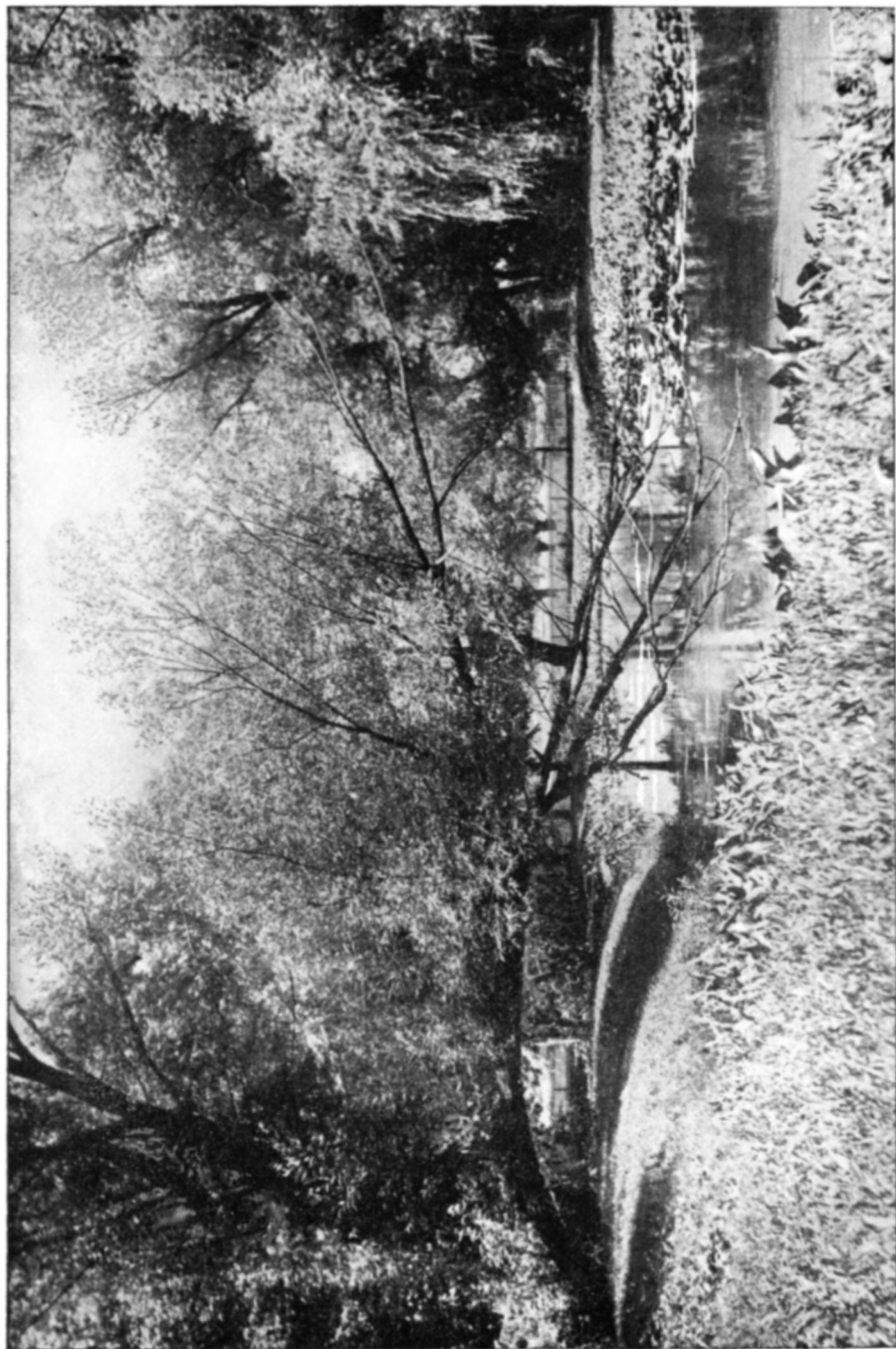
Respectfully,

JAMES M. SAFFORD.

STATE OF NEW YORK, }
 OFFICE OF THE STATE ENTOMOLOGIST, }
 ALBANY, April 30, 1890. }

My Dear Sir: I regret that it will not be possible for me to avail myself of your kind invitation to attend the banquet to be given on the 26th prox., in honor of Henry Shaw, the Founder of the Missouri Botanical Garden and the Shaw School of Botany.

It would afford me very great pleasure could I, by my attendance on the occasion, show, even in some faint degree, my profound veneration for the memory of the man whose delight it has been to make such princely provision for a continuance through all future time of botanical study, under perhaps the most favorable circumstances that could possibly be devised for its successful prosecution.



WILLOW POND IN THE ARBORETUM.

An endowment of this character will be universally acknowledged by every true scientist, not only as a beautiful and just tribute to Natural Science, but as an act, that in its broad appreciation of the value of science, has lifted up human nature nearer towards Him who made our beautiful world "and all that is therein."

I am very truly yours,

J. A. LINTNER.

WEST CHESTER, PENNA., May 6, 1890.

My Dear Sir: Will you be kind enough to thank the Trustees of the Missouri Botanical Garden for their invitation to be present at the Annual Banquet held May 26th in honor of the Founder: Henry Shaw.

Time and distance prevent my acceptance of the honor. I thank the memory of the founder for the impetus thus given to American botany: for the enduring basis upon which he placed his benefaction: for the example he has left to other men of means to be equally large-minded and liberal towards humanizing studies: and lastly for the possibility, thus provided, of having in our own land at least one such institution which shall compare favorably in size and productiveness with anything in Europe.

Believe me, sir, I am faithfully yours,

J. T. ROTHROCK,

Prof. of Botany in University of Pa.

The Chairman then called upon Dr. Farlow, of Harvard University, as follows: —

Gentlemen: The method and first step of all science, at least since the days of Lord Bacon, is to ascertain and classify the facts from which it may deduce general laws. There are various modes of conducting scientific investigations. I dare say you all remember the old story of the prize offered by some academy of natural history for the best description of a camel, and of the various methods adopted by those who competed for it. The story was first told, — I am afraid it was invented, — by an Englishman. At any rate, he said that among the competitors or the prize were an Englishman, a Frenchman, and a German. The Englishman went to Arabia, abundantly provided not only with ammunition, but every creature comfort and convenience, employed numerous native guides and

servants, hunted the camel to his heart's content in its native deserts, studied the animal and its habits at his leisure, and thus prepared his treatise. The Frenchman, reluctant to tear himself from the delights of Paris, hied him to the Jardin d'Acclimatation, found and studied the captive camels there, satisfied himself that nothing more was necessary, and wrote a treatise in which whatever may have been wanting in the way of natural history was made up by sparkling wit. The German scientist repaired to his study, and there, enveloped in clouds of smoke, evolved a description of the camel from the depths of his own consciousness.

From this story we learn nothing about the methods of investigation pursued by American scientists. But it is our good fortune to have with us as guest this evening, an eminent professor of the science of botany, who can give us such information. May I ask Dr. Farlow, of Harvard University, to tell us something about "The Botanist as an Investigator?"

DR. FARLOW.

Your invitation, Mr. Chairman to attend the meeting this evening gave me a great deal of pleasure, I assure you. I had hoped, when I arrived this morning, to be shown for the first time the Shaw Garden under the leadership of your Director. Unfortunately I missed him at the station and was therefore entrusted to the tender mercies of a driver. The St. Louis driver is probably like other drivers and I hardly expected to find here or elsewhere a person well informed in botanical matters in the shape of a driver. But I found on arriving at the Garden that this St. Louis driver was not content to take the fare he would have charged any of you, but insisted upon taking me into the Garden and describing the different objects of interest. He seemed to be perfectly familiar with the arrangements there and I was quite delighted with him, and I said to my-

self, "If the St. Louis drivers are so well informed about their Botanical Garden, what must the general public be!" For I supposed that the drivers were not so likely to be interested in the plants as the majority of the populace. Of course, there could be no doubt that the St. Louis people fully appreciate the Garden. It is a source of pleasure and instruction of the best kind, but, as a stranger, you will pardon me if I refer to one point which does not seem to me to have been touched upon by the previous speakers. One speaker before me has mentioned that the Garden has a local interest. Excuse me. It has a very much more than local interest. Why, only a short time ago, I had a letter from Edinboro'. The Professor there said "What a start they have at St. Louis!" Why, of course they have! He knew it as well as I did. A knowledge of the Shaw Garden and its promise for the future is not limited to St. Louis by any means. It has been known for years abroad, and the ample endowment you now have has fairly surprised everybody in America. No other Garden in this country has anything like the endowment which the Shaw Garden has, and not many in Europe can be compared with it. In a very admirable Book, we are informed that "where much has been given, much shall be required." Much has been given here, what shall be required? That St. Louis shall take the lead in scientific investigation. There is no doubt whatever that, with such an intelligent, such an active body of men as your Board of Trustees, the interests of St. Louis will be looked out for as far as the Garden is concerned. But the highest interests of St. Louis are the interests of the United States—they are the interests of the world. They are the interests of Science in general; and Science itself is more than local, it is universal, wherever man is found. Now you have here in St. Louis a Garden with an endowment far surpassing that of any other Garden in America, and possibly equalling that of the best Gardens in Europe, with a fund which may be and should be spent for the purposes of investigation.

What does investigation mean? It does not mean any thing which is of necessity capable of practical application at first sight. The investigator is a dull, plodding mortal, working away year by year. But at last he discovers something which is of benefit to all mankind. You should not hurry the investigator and say, "We must have a report in six months." "We must have a report in a year." "Tell us about this thing, about that thing, about the other thing." An investigator is one who knows what he is about, and he knows a great deal better than you do. He is one who has been trained, who has studied deeply, who is thoroughly in earnest. He is not one who is making money but one who is bound to discover the truth, and the truth is what we want.

The weak point of science in the United States has always been not that we have not energetic men, not that we are without talented men, but that the men are not allowed to turn to abstract study for the simple reason that the American mind does not encourage abstractions. But we know what Newton did. Gravitation was an abstraction. The germ theory also was an abstraction, and we know what practical results have come from abstract studies in these cases. Here in St. Louis, better than anywhere else, you are provided for doing abstract work. Trust to research. Do not be afraid to go ahead and leave to investigators the work which, in the end, and perhaps in a comparatively few years, must give your Garden a prominent place amongst all the Gardens of the world. Do not be content to say, "We of St. Louis have here a beautiful Garden, where we can go every day and examine the plants and appreciate the beauties of nature," but do not rest until you have established here a school of research, research in the most difficult problems of botany, being assured that in the end those problems will be of advantage not only to St. Louis, to Missouri, but to the whole world. Once having made in St. Louis a school of research, you will then take the lead in practical horticulture as well as in more purely

theoretical science. You already have at the head of the Garden one qualified to lead in research. I have the good fortune to know your Director. I have known him for a number of years and I feel that you have got entirely the right man for the place.

Now, I am perhaps a little heretical on one subject. Not heretical in the light in which you would regard the subject, but in the way in which a college professor may be supposed to form his opinion. It has been said that a business man does not know anything about science. He knows about making money and that is the end of it. But there is one thing he can know; — that he does not know how to manage the details of science but must select proper men to manage them. Now, you have this evening commemorated the beneficence of Mr. Shaw. He was not only beneficent — many men are beneficent — but I hold beneficence, great as it is, as doubly great when combined with an intelligence like that of Mr. Shaw. Mr. Shaw knew what he wanted. He appreciated Nature, he observed the beauties of plants with a reverent spirit, and he saw that there were scientific problems which needed to be studied and he recognized that he did not know how to manage those problems himself. To aid in the development of his plan, years ago he associated with himself Doctor Engelmann.

Now, to digress for a moment right here. St. Louis, in the East, is called a new city. As far as science is concerned it is not a new city. In science there is no city in the West that can be compared with St. Louis. For many years St. Louis has been the home of scientific men of marked reputation. Doctor Engelmann, it was my privilege to know. Trained in foreign Universities, the intimate friend of leading scientific men of both hemispheres ever since he settled in this city, more than fifty years ago, he pursued science for its own sake. The demands of his profession gave him but comparatively little time, to be sure, but in that little time he accomplished a remarkable amount of first class work. Too great honor

cannot be given to the pioneers of science in this city of St. Louis. The pioneers of learning in the West were here — they were not to be found in other cities at all. Now, Mr. Shaw, as I say, early associated himself with Doctor Engelmann, and afterwards with Doctor Gray. He knew what he wanted and that, of all persons of scientific training, Doctor Engelmann and Doctor Gray were best capable of forming a plan for the detailed elaboration of his great purpose. In Mr. Shaw's will, which I regard as a great model of clearness and far-seeing scientific perception, he has made provisions for plans he had in view. He distinctly says that the Garden is not only to be a place of recreation and instruction for the public, but also special botanical research. You have a person to my knowledge amply capable of carrying out research in its best form and, as you have done me the honor to suggest that I should be, in a sense, an advisor, may I offer simply this advice, which I think you will not neglect to follow. That is, to keep right on as you have begun; go right ahead and do not be afraid, no matter what people say, to insist upon research. You have your garden for the public, you also have the means of research, and in ten years, in twenty years, in thirty years, by constantly pushing onward, you will be in a position absolutely above all ordinary establishments in this country. Perhaps you may be even the leading establishment in this country, for I am sure that there is no University having anything like the endowment which has been given to the Missouri Botanical Garden by Mr. Shaw.

To the next sentiment the Hon. Norman J. Colman was asked to respond, as follows:—

You will remember, gentlemen, that in the will of Henry Shaw he speaks of botany not only in the sense or with the meaning which perhaps includes all that many of us find in that word,—that is, a knowledge of plants sufficient to enable one to pick a flower to pieces and explain in an interesting way, to a class of young ladies, how many pistils

and stamens it has and what sonorous Latin name it bears. Much more than this, as Dr. Farlow has said, Mr. Shaw recognized in the science of botany. He desired to promote the study and development of that science in its broadest relations. One direction in which he expressly provides that investigations shall be made is in respect of the relations of botany to agriculture.

Among the guests whom the Trustees have the pleasure of welcoming this evening, is a citizen of Missouri, who, besides holding important public office in this State, and in the United States, has devoted many years of his life to the promotion of farming interests and the intelligent study and pursuit of agriculture. Appointed by President Cleveland to the important office of Commissioner of Agriculture, he became, towards the close of that administration, the first Secretary of the Department of Agriculture, then newly established by Congress.

I have great pleasure in calling upon the Honorable Norman J. Colman to respond to the sentiment,—“Botany, in its relation to Agriculture.”

COLONEL COLMAN.

Mr. Chairman: At this late hour of the night, I feel that it would be quite out of place for me to make any protracted remarks, and I shall be very brief indeed in what I may say. I have been led to ask myself, as I have listened to the very appropriate and able speeches which have been delivered, if he who has caused two blades of grass to grow where only one grew before should be called a public benefactor, what higher title and honor should not be given to him who has caused thousands of blades to grow where only one grew before, who has collected from the four quarters of the globe the most beautiful trees and shrubs and flowers which were native there, and brought them here and planted them and nursed them and left them as a legacy

for all time to the people of St. Louis, to the people of Missouri, and of the Nation.

A little more than half a century ago, a young man came to St. Louis and cast his lot with our people. With but a small capital he commenced business and, by close attention to that business, was successful. All of his spare hours, as he has told me himself, were devoted to the study of botany. He loved trees and flowers with a devotion which he could not overcome. And he determined, even soon after locating here, at some future day to establish a Garden which should be a pleasure to every person who should visit it as well as to himself. Unlike other business men, when the cares of his office and the duties of his business were over, he gave himself to his books, to the study of botany, and mastered that most difficult, that most interesting science. He collected all of the indigenous plants which it was possible for him to secure here, and sent abroad for other choice trees and plants, spending his means, devoting his time, to the collection of what we now have here, which is so great a credit to the City; and the Botanical Garden which bears his name has not an equal upon this continent and but two or three that equal it in the whole world.

What an example has Henry Shaw set to the young men of this country! With his own mind, with his own hands he carved out his fortune. Instead of wasting it, as many do, he spent it for the good of the people of St. Louis, for the good of humanity. He loved flowers and that love is an innate love of man. History teems with the description of gardens from the earliest ages of man. Even biblical history tells us that Adam was placed in the Garden of Eden. This love for flowers, this æsthetic, finer nature, needs more attention, needs more culture than is usually given it. And we have advantages here in this city in that respect possessed by few others, and yet, gentlemen, this is but the foundation. Mr. Shaw has simply laid the foundation. What will not this garden and this magnificent park a hun-

dred years from now, or a thousand years from now, be in comparison with what it is to-day! It is left as a legacy to the public for all time, it is a school of instruction, and I believe that this work will go on and on with increasing vigor. I believe that we have a Board of Trustees that will devote their time, that will devote their energies, to carry out the wishes, to carry out the trusts which Mr. Shaw so wisely reposed in them.

I have not time, Mr. Chairman, to speak of this matter in its scientific relations to agriculture. It is well known to every botanist here that we can now breed plants with as much certainty of improvement as we can breed domestic animals. The knowledge of the science of botany has given to man the power to improve the varieties which God has given us, and they have been improved. Even our fine pippins had their origin in the crab-apple. Van Mons spent a great many years in the improvement of pears and succeeded in obtaining hundreds of new varieties by cross-fertilization. These gardens here are a school of instruction. They are an experiment school. We have had lately given us at Washington six hundred thousand dollars for the establishing of experiment stations in each State, each State receiving but fifteen thousand dollars for that purpose. What is that in comparison, gentlemen, to the magnificent endowment of Henry Shaw?

There is one more point and I will close. As I have traveled through this park with my farmer friends I have frequently been questioned as to what is this tree or that tree or the other tree. Other persons have visited these grounds and have endeavored to describe certain trees to me to ascertain what they are, and I have been sorry to see that one very important part has been neglected, which I hope in the near future will be changed; and that is the labeling of every tree and every shrub, so that the humblest farmer, the humblest citizen who visits those grounds, if he sees anything which strikes his fancy which he wishes to procure and take to his home to adorn it, may know just

what it is, so that he may get it at one nursery or another. But the lateness of the hour, Mr. Chairman, will prevent my speaking any further.

Mr. Colman having concluded his remarks, the Chairman said:—

I am very glad, gentlemen, that Mr. Colman so frankly mentioned what has occurred to him in visiting the Garden, because it gives me the opportunity to say that, at the suggestion of the Director, the Trustees some time ago gave directions that every tree and plant in the Garden should have affixed to it a suitable label, for the very purpose to which he has referred.

Mr. Shaw's will, you will remember, designates as the guests to be invited at this annual banquet, literary as well as scientific men, friends and patrons of the natural sciences. That duty we have endeavored to fulfill, and with very gratifying success,—though not all that we hoped for, for our desires and expectations are very extensive. It is quite evident that in his thoughts there was no trace of that ancient prejudice, not yet absolutely extinct, in virtue of which it was once supposed that there was some kind of conflict between Literature and Science. Men of culture, in this day, occupy broader ground. They know that between literature, or what used to be called "the humanities," and science, there is no opposition. Like the Muses of old, they are sisters, harmonious in their different spheres. The universities of our own country not only recognize the value, indeed the necessity, of scientific instruction, but are including scientific schools among their departments. We have the pleasure this evening of welcoming among our guests a gentleman who represents perhaps particularly the literary branch of culture,—the President of Randolph-Macon College of Virginia. And I shall ask Dr. Smith if he will be kind enough to illustrate for us the fact that literature and botanical science are nearly connected, that they sometimes have a very intimate and

practical connection, by telling us something about the *Betula alba*, commonly called, I believe, the white birch.

DR. SMITH.

Mr. Chairman, and Gentlemen: A happy accident has put me in position to accept your very kind and courteous invitation to be present this evening, and I have enjoyed these exercises more than I can tell; because I have not only been entertained but greatly instructed by the addresses and remarks that have been made in connection with the various toasts that have been proposed to-night. I confess, however, that my pleasure in hearing the last address or two has been diminished or disturbed more or less by the fact that I have been notified by the President that I was to be called upon to say something myself on this occasion, and I have been casting around in my mind to find some point of connection — how I, not specifically a botanist, but only a pedagogue, might get correlated with the situation, as it were, in this learned company. I have been helped in this search for a nexus by the statement which your President made when he said that it was a part of the purpose of the founder of this institution to promote arboriculture. I was further relieved when Doctor Trelease said that it was the purpose to make the investigations at the Garden practically useful, and now I am prepared to stand before you as a teacher and as representing teachers with a worthy subject, the merits of *Betula alba*, and to ask very earnestly that my friend Dr. Trelease shall not neglect this teacher's friend, the old-time birch. I desire also to impress upon my friend, the Governor, and I am very glad that I have the opportunity of addressing this directly and personally to him, that much more of gratitude is due to *Betula alba* from our statesmen than has ordinarily been given to her. I stand in defense of her claim that upon her rest the foundations of the State. For, sir, it will be admitted that our republican institutions rest upon our schools; who will deny that? That the maintenance of our schools rests upon the

authority of the teacher; who will deny that? And that the authority of the teacher lodges at last in *Betula alba*, and who will deny that? Thus we see that there is at once a fundamental need that this Garden which is to stand as the representative institution of this country in this particular line, shall not neglect the culture of the most indispensable *Betula alba*.

My own acquaintance with the practical application of arboriculture to pedagogy commenced in my very early years. I remember, sir, — I remember it very distinctly, — when at a very tender age, *Amygdalus Persica* was applied to my personal anatomy. I called it peach switch then, but it was to *Amygdalus Persica*, applied by maternal hands, that I owed many resolutions of filial duty. I remember, sir, when I advanced to the greater dignity of *Betula alba* in the hands of a stalwart male teacher. But when, sir, as a sturdy youth, my progress in robustness of form and persistency of will was such as to demand the application of *Carya alba*, the redoubtable hickory, I graduated, sir, with college honors!

I confess that I viewed these gifts of nature at that time from an opposition stand-point; but since I became a teacher, I have changed my point of view, — swapped ends, as it were, — and have learned to look upon them as the essential foundations of modern civilization.

The poet has sung of *Betula alba*. I may be allowed, perhaps, to quote from one of our poets, who has addressed the country upon the duties and the character of the pedagogue, in language antique though in modern times. He says — you will remember our American poet, Saxe —

“Righte lordlie is ye Pedagogue
As any turbaned Turke;
For, welle to rule ye District Schoole,
It is no idle worke.

“For, as 't is meete to soak ye feete,
Ye ailinge heade to mende,
Ye younker's pate to stimulate,
He beats ye other ende.”

And I tell you, sir, that there are times, as the poet goes on to remark, when even *Betula alba* fails, and when nothing, sir, short of *Carya alba* will suffice; for

“ Sometimes he heares, with trembling feares,
Of ye ungodlie rogue
On mischieff bent, with felle intent
To licke ye Pedagogue!

“ And if ye Pedagogue be smalle
When to ye battell led,
In such a plighte, God sende him mighte
To breake ye rogue his heade!”

And I add, for such emergencies, may Doctor Trelease ever keep for us an adequate and accessible supply of *Carya alba*.

But, gentlemen, *Betula alba*, noble and great as she is, has had her enemies, her rivals. Even in classic times I remember that Juvenal says,—a man of some authority, though I will not admit the greatest,—*Manum ferulæ subduxi*, or words to that effect. But I am glad to be able to appeal from Juvenal to a higher and wiser authority against this unworthy rival, the ferule; for, is it not written in the works of the wisest of men and one who “wrote of all trees, from the hyssop that springeth in the wall to the cedars of Lebanon,” an authority, I may say, pre-eminent among botanists, that he that spares *Betula alba* will spoil the progeny of his loins? But a new peril has arisen in these modern times, and I pause, gentlemen, to ask your earnest consideration of this danger. I do not know that I can present it to you more forcibly, if you will allow me, than by an incident that has recently been related to me. It has come with all the evidences of authenticity from across the water, and it shows, gentlemen, the persistent malevolence with which our British cousins are ever seeking to undermine American industries, even to attacking *Betula alba* in her own home. The Queen of England, a lady who, you know, is sedulously desirous for the education of

her children, requires, it is said, the professors of Eton College, when she is at her Windsor Palace residence, to give instruction to the members of the Royal family. Among those members was the bright, delightful and accomplished Princess Alice, and among her teachers was the solemn Doctor Hicks, a trifle more stately and dignified than the ordinary English head-master, and that is saying a great deal. It is said that upon one occasion, Doctor Hicks crossed the Thames, strode up the long avenue of elms, was ushered into the royal apartments and proceeded to give his instruction in mathematics to his pupils. Before him, with the other members of the royal family, was the Princess Alice, crouched up in her seat, with brow contracted, now and then erasing from her slate the figures that she had made, illustrating the axiom that there is no royal road to learning. At last she looked up from her place and, addressing the presiding officer, exclaimed, "I say, Hicks, I can't get this thing!" "Hicks! Did that child call me Hicks?" With difficulty restraining himself, he at once asked for an audience with the Queen and was promptly shown into her boudoir. Immediately she arose and said, "Doctor Hicks what can I do for you?" "Your Majesty," said he, "I have been insulted. Your daughter Alice has insulted me." He then detailed the circumstances, and the Queen sent for Alice, and at once addressing her, said, "Alice, my daughter, I am surprised that you should ever forget that you are a lady." Administering a severe reproof, she concluded by saying, "And now, if ever I hear of you in any way showing disrespect to your teachers, I shall send you to bed." Note that, gentlemen,— "I shall send you to bed." Not "I shall apply *Betula alba*," the proper corrective, nor even "I shall apply *Amygdalus Persica*," but "I shall send you to bed." *Cubitus* has arisen as a new and dangerous rival to *Betula alba*, and that, too, from the British possessions. The Doctor smoothed his ruffled plumage and retired. His step was more stately than ever. Royalty had been taught a lesson

of respect and reverence to age and learning, and as he returned to his home it was in the full consciousness of victory. The next day he returned to give his accustomed lessons. Of course, there was added majesty to his demeanor, there was conscious authority and victory in his eye as he walked up the long aisle; the flunkies bowed lower than ever, the doors were flung open to him, and, as he entered the hall from the upper end, there came tripping down gracefully to meet him, courtesying humbly as she came, the Princess Alice. The Doctor rejoiced at the completeness of his victory. But lo! as she reached him, bowing low but looking archly up, she cries out — “ Good morning to you, Hicks. How are you to-day, Hicks? I hope you are in a better humor to-day than you were yesterday. And now, old Hicks, good-night, for I am going to bed.” Now, don’t laugh the wrong way about that, for I am afraid your sympathies are with the Princess Alice instead of with Doctor Hicks.

But, gentlemen, let us not forget the serious side of this matter. In addition to the defeated aspirants for the lawful honors of *Betula alba*, the ferules, raw-hides, rattans, straps, *et id omne genus*, there comes direct from the Court of England, backed by British authority, — and who will deny by British gold, — this new and ignoble competitor, endeavoring to supplant the products of our American forests. We have stood such things as long as we may, and now I appeal to you, gentlemen, in the name of our country, to protect *Betula alba* from all foreign importations, from the rawhide of South America, the rattan of India, the ferule, come whence it may, and especially from this last innovation of an effete and, I may say, a bed-ridden monarchy; and I ask in behalf of the cause I seek to uphold, that the Trustees of the Garden join hand in hand with the educational associations of the State and, appearing before Congress, demand a prohibitory tariff against this and everything else, for the protection of our native and all-powerful *Betula alba*.

The closing speech of the evening was made by Dr. James Hall, the Director of the Cabinet of Natural History of the State of New York, who was thus introduced by the Chairman: —

It has been very pleasant to us who live here, to be told by those who know whereof they speak that St. Louis is reckoned one of the older cities of this country, so far as the pursuit and promotion of natural science is concerned. Not many years have passed, as nations count years, since virgin forests, penetrated only by the wandering savage, covered the ground now occupied by many miles of well built streets, the busy haunts of industry and traffic. Even during Mr. Shaw's active business life, before he conceived the plan which during forty years afterwards he was engaged in carrying out, the idea of founding, in the Far West, a Trust like this for the promotion of botanical science, would have been considered, if considered at all, as something which belonged to the far distant future.

And yet, gentlemen, we are gratified this evening by the presence of a student, let me rather say a master, in natural science, who first visited the then distant West, fifty years ago, as a student of natural science, and whose long life has been devoted to its pursuit. Dr. Hall, the Director of the Cabinet of Natural History of the State of New York, has not only done us the honor to come a thousand miles to be present on this occasion, but has kindly consented to tell us something of his own experience during those years through which he has watched the growth and aided in the development of science in this country.

DR. HALL.

Mr. Chairman and Gentlemen: After all the good things have been said, what can I say? After such an eloquent appeal in favor of *Betula alba*, one of my early acquaintances, perhaps even before I studied botany, I can only, as

an offset, mention an anecdote connected with Princeton College a full century ago, when Rev. John Witherspoon was President of that institution. It was then the practice to apply *Betula alba* and also the *ferula* when it was considered necessary, and one day the President coming into the Latin teacher's room found him with one of his boys laid upon the form (the desk) and administering *a posteriori* the *ferula*. "Tut, mon!" said the President, "what are you doing?" "Oh," the other replied, "this boy is lazy. He doesn't get his Latin lessons and I have great trouble with him; more than with all the rest of them." Whereupon the President replied, "Tut, Tut, mon! ye'll never bate the Latin in that wa'!"

I did think, gentlemen, at the beginning of this banquet, that there was something I might say, and it occurs to me now that a few words comparing the present and the past would be appropriate to this grand occasion: — the celebration of an event which makes an important epoch in your history, the results of a most munificent bequest, which places your city and state far in advance of any other. I wish to compare the conditions now existing for scientific study and teaching in this "far West," which I knew almost as a wilderness fifty years ago, with the conditions which existed in the East during my boyhood. After passing through the ordinary school, or even while I was still an inmate of the ordinary school, such as existed in New England at that time, and in Plymouth County, Massachusetts, I there received my earliest education. Doubtless I have forgotten much of *Betula alba* that was vivid to me then; we often forget our pains in the pleasures that follow, and I dare say, I have forgotten most of the ministrations of that beautiful tree which grows in our forests and which we utilize in many ways!

I was fond of nature, infatuated with nature. I could not go from my father's house without bringing back shrubs and flowers. I appealed in every direction for some information, some instruction which would give me a clue

to the names of the flowers and shrubs. I knew from my reading, even though a boy, that there were names to flowers, that they had botanical names, that they had names by which they could be known everywhere. I appealed to the teacher of my academy, a graduate of Harvard University. Begging the pardon of the Professor just speaking, there was at that time no regular professor of Botany in Harvard University, and I appealed to the teacher of my academy, who was a graduate of that college, in vain for some instruction which would teach me the names, or the manner or mode by which I could learn the names of those plants which I was so interested in collecting, but it did not come to me; it was not to be had. And later on, watching for everything which would give me a clue, any information in regard to nature in every one of its aspects, I saw that there had been established in the State of New York a school with the modest title "For the Teaching of Agriculture and the Mechanical Arts," established by a man who held large landed possessions; the Honorable Stephen Van Rensselaer, patron of the Van Rensselaer Manor. This gentleman, feeling that his tenants were not as intelligent as he would like to see them, himself a correspondent with scientific men and scientific societies over Europe, saw the desirableness and even the necessity of beginning some foundation for a more practical system of education — and if you will look at the records of our State of New York from about 1790 onward to 1817, you will see that agriculture, manufactures and the mechanical arts were uppermost in the minds of all intelligent men. Science had hardly a name. And yet this school established for the teaching of agriculture and the mechanical arts became the source of science teaching in this country. The students of this school, under the direction of a professor, — not such professors as we now have, because there were none in America, — were permitted to go to the farmers' fields to watch the growth of vegetation, to do what they saw fit in regard to the plants that were growing; in that par-

ticular making of certain farms that were allotted to the use of the school, experiment stations. And there, gentlemen, I think, in the neighborhood of Troy, in the establishment of the Rensselaer School, were the first agricultural experiment stations. But, unfortunately, the farmers complained that the experiments were too expensive and after a few years it was prohibited. However, the principal of this school himself inherited a love for science in every one of its departments, having given scientific lectures over the country of New England and some parts of New York, and had infused into men of ordinary pursuits a love, and a respect for science which has hardly ever been equally true of any other people or country. A very excellent friend of mine, a lawyer, who died a few years ago at the age of seventy-eight, listened to a course of lectures by Professor Eaton when he was a boy in Hudson and through the influence of that love for science there engendered, and having been a State officer, and in various public positions, always gave his countenance and help to scientific pursuits.

This school, established as a school for the teaching of agriculture and the mechanical arts, became a school for the teaching of botany, mineralogy, chemistry and geology under the auspices of this patron of science. A geological and agricultural survey of Rensselaer County was made, as also of Albany County, and the results were published about 1823 or 1824. Immediately upon the opening of the Erie Canal, a survey of the entire length of the canal was made by this Professor Eaton and his students, under the patronage of Stephen Van Rensselaer, bringing out the results as far as it was then practical in the way of geology and agricultural botany, and other facts in science, in a volume published in 1824. Now, that was my knowledge of the beginning of scientific work in this country, as I had derived it mainly from newspaper reading in my boyhood.

I ought to have said that, failing in every way to be taught the elements of any one of the sciences, I made my way to Cambridge and found there were courses of lectures

on mineralogy ; but that did not meet my wants. I then, in despair of acquiring knowledge nearer home, walked across the country from Boston to Troy, leaving Boston on a Monday afternoon, after bidding good-bye to my friends, and arriving at the Rensselaer School on Saturday night. There I had the pleasure of spending five years of my life as student and teacher and I saw there what could come out of very poor surroundings. We had one building only, a brick building, substantial, to be sure, upon which was painted the sign of the school. Our laboratories for botany, for chemistry and for mineralogy and geology were mere sheds, in fact no better than sheds in their external appearance. But every one of those students who entered there became imbued with the soul and spirit of science and no student ever came within the influence of Professor Eaton, the principal of the school, who did not come out at the end of his course permeated with the love of and a respect for science and a desire for its advancement. Every lesson or recitation was in the form of an extemporaneous lecture giving the student's own knowledge of the subject, and not a recitation from books. Even the man whom you have spoken of, the great botanist of our country, Professor Gray, received his first instruction through the influence of the Professor from whom I received my first instruction at the Rensselaer School; not at the school, but indirectly and elsewhere. And Doctor Torrey, who was our greatest botanist, before Dr. Gray, also received his direct instruction from Professor Eaton, the first principal of the Rensselaer School in Troy.

These, gentlemen, were some of the beginnings of science. It seems a very long way to trace its history from that time, when it was difficult to even acquire the elements of the knowledge of botany, to a period when you have here, from this grand man, a bequest more comprehensive in its purpose than any which has been made in any period of the world's history, I believe!

Because botany has not been the pursuit of my life, it

does not the less interest me. The first years of my student life at Troy were spent in the study of botany, only, however, to study it superficially, to learn the names of the plants, to learn their relations to other plants, and finally, as I began the study of medicine, to know something of their medicinal qualities. I performed many experiments upon myself during those years in which I was devoted to botany, and the happiest years of my scientific life were those in which I followed this pursuit of botany, giving me more pleasure, more satisfaction than anything else I have ever done in the same length of time subsequently.

Botany in those days extended very little farther than the knowledge of the natural relations of plants, the one class to the other, or the one set of species to another. Very little more than that; and in the course of two years I had accumulated a herbarium of 900 species of native plants growing along the Hudson Valley within a radius of ten miles around Troy. That botany had become a popular study in the schools may be inferred from the fact that eight editions of Eaton's Manual of Botany, based upon the "Artificial System", so termed, had been published almost before the text-book of Dr. Gray, based upon the "Natural System", had found its way into the schools; Eaton's latest edition, being only a year or two after the first publication of Gray's Elements of Botany.

But a bequest of this kind is farther reaching than perhaps you will consider when you look at it only in its relations to botany. Every department of science in America has progressed so rapidly that it is scarcely possible to take note of the progress which has been made. Leaving botany for geology, I have known your country, even this locality of St. Louis, just 49 years ago, as a city of less than 20,000 people. I made no acquaintances here, I believe, at that time. I was making a geological exploration of the country between New York and the West, the Mississippi River ostensibly. Years later, I become acquainted with

your scientific men ; about 1850 to 1855. And when I look at this magnificent bequest for science, I can only recall how earnestly these men were working, how untiringly they struggled for success. The geologists and paleontologists of your latitude have left comparatively little of tangible record in the way of collections to mark their own time. Only one of my own friends, Doctor Engelmann, can be said to have his memory perpetuated in this grand bequest of Mr. Shaw. Nevertheless, it is impossible, gentlemen, to separate one science from another. The sciences must go hand in hand. You will put into the organization of your Botanical Garden some men, at least, with a knowledge of chemistry as well as of the geological relations of the soils, because it is absolutely impossible for an individual or a school to know on what soil to grow plants successfully and to improve their condition unless he knows something of the composition, the chemical nature and geological origin of that soil.

Now, it is too late to more than suggest what ought to follow,—what I think should follow such a bequest as this. You live here, gentlemen, in a city whose magnitude is so far beyond what one could have expected forty years ago that it seems to dominate the West. It will not be long before your city will be the greatest city in the West. You have this one grand thing, a Botanical Garden and a School of Botanical Science. Now, will you, gentlemen of St. Louis, allow the Botanical Garden, which every one loves and admires, so far to absorb all interests that you will forget other sciences, your geology and mineralogy,—features more directly important in their commercial and economic aspects,—will you forget these? And I want to say one word here in regard to your Geologist and your geological survey. It may be a little out of place, but it has come directly to me in this way. My acquaintance in St. Louis in 1850 to 1855 shows that you had here one botanist pre-eminent ; it showed also that you had several geologists and paleontologists, Doctor Prout, Professor Shumard and some

others. These have gone and so little is left to mark their work that I am sorry to say it is scarcely creditable to those who have followed them. I have been examining these collections myself for my own purposes of knowledge and I am sorry to feel that your collections in that direction are barely as good as they were forty years ago. You have a geological survey; you have had a geological survey before, and I ought to say, perhaps, that my experience in the geological survey of the State of New York, if it does not give me the right to speak, gives me an opinion which I cannot very well help expressing. We in New York began a geological survey in 1836. The report of the Secretary of State proposing an organization of that survey was made in 1835. In 1834 the Albany Institute, in which at that time were some prominent men of science, as science was then known, passed a resolution of this kind, recommending that a law be passed which shall result "in bringing together under one roof all the natural productions of the State of New York." Now, that was attempted to be carried out; our survey was carried on for a few years and terminated with the appropriation and fitting up of the old State Hall, or the building which had been occupied by the State officers for fifty and more years, for a geological and Natural History Museum. This building was appropriated to us, and an attempt was made to bring in specimens of all the materials which should express anything in relation to the natural products of New York; all the plants, all the animals, all the minerals, whether interesting only in a scientific aspect, or interesting in their economic aspect. This work has not yet been finished. It may be accomplished some time in the future; but what I would say is that by this course we have preserved the tangible evidences of what was accomplished during the four years of the geological survey. You have had a geological survey in this State, but I understand the materials have never been brought together in any public building. In several other States the same thing has happened. The materials collected by the surveys, so

far as all practical use of them is concerned, have been lost. Now, to a man who is a cosmopolitan as I am, with no prejudice for East or West, or for one part of the earth over another, and from what I know of the resources of Missouri, and which I have known in a general way for more than forty years, it seems to me that they should no longer be neglected. It is the duty of the authorities, of the Legislature of the State of Missouri, to erect a fire-proof building, where all the natural products of the State of Missouri can be brought together under one roof; that you should not go on with your geological survey for a few years only, your materials collected to be poorly housed and finally lost. Go on with the work so long as new facts and new knowledge can be acquired from the investigation; adding yearly to the stock of information which will increase the general intelligence of your people, and give them a true appreciation of the resources of this great commonwealth. Science is truth; and the workers in science are looking for the truth. Indirectly we give you commercial advantages, coming from our knowledge—economic advantages, I should say, and it is not a fair thing toward men of science to neglect the preservation of the records of their work; for if this work is not made of economic importance, it does not come home to you in any direct way.

It is true the results of these investigations do come to us in a greater enlightenment and cultivation by entering into our sources of education and in becoming a part of our life. Your streets, your houses and public buildings are lighted here by these electric lamps, your cars are moved upon the street by this same power. A few centuries ago the men who were experimenting with electricity were ridiculed, but you have now the practical results. It is your duty, I say, not only to your State but to those who would come to your State to invest their capital in economic workings, or to live among you as intelligent and cultivated citizens, and above all as an inheritance for your children, that you should have a place where all the resources of your State can be exhibited under one roof.

The Chairman: Gentlemen, but one word remains,— a word of grateful thanks on the part of the Trustees of the Missouri Botanical Garden for the kindness and courtesy of your presence: especially, —and in this I speak not only for the Trustees, but for all our St. Louis friends, —to those who have manifested their interest in this institution by coming so far and so kindly taking part in this occasion. Let us all hope that this shall be but the first of many Annual Banquets, at each one of which shall be noted constantly increasing progress in the promotion of science and knowledge, with which the name of Henry Shaw, among those of other benefactors of the human race, shall be inseparably connected.